

Compiled Answers of Follow-Up Questionnaire on "Cadastre 2014", August 2000

22.1.2001

Jurisdiction for which the Responses are valid

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| HGK | HONG KONG |

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1. Issues and Activities Related to "Cadastre 2014"

1a) Was there some sort of acknowledgment of the 6 statements by professional associations and/or authorities in your country/state ?

AUS-NSW Yes, Generally most associations accepted the statements. The New South Wales cadastre is well on the route proposed by "Cadastre 2014"

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| CAN-QUE | There was no acknowledgement of the 6 statements in Quebec. |
| COL | Yes, partially from National Geographic Institute (IGAC) |
| CRO | Yes, there was. |
| CZE | Yes. The statements of the "Cadastre 2014" are known by some people both of Czech Union of Surveyors and Cartographers (CUSC) and of Czech Office for Surveying, Mapping and Cadastre (COSMC). |
| FIJ | No. |
| FIN | Presented paper and discussions in our Surveying Days 1999 in Oulu |
| FRA | This questionnaire was not very known in our professional association. But the ones who have heard about it find it very interesting. Maybe the OGE could translate it and ask all this members (about 2000 private surveyors) to give an answer. |
| GER | Discussion started 1999 in education of staff for the public sector. The Working Committee of the Surveying Authorities of the States of the Federal Republic of Germany (AdV) takes the statements into account in their Working Group of future developments in cadastre. |
| HGK | No |
| HUN | Hungarian survey and land registry law, unified land registry institutions follow and work according to the 6 statements of Cadastre 2014. The majority of our professionals have knowledge about the subject of Cadastre 2014. |
| LIT | During the Phare project "Land Market Development in Lithuania" and Swedish project "Land Information System in Lithuania", and in the Lithuanian Surveyors Association. |
| NZL | Yes. The NZ Institute of Surveyors (NZIS) joined the Institution of Surveyors Australia in printing copies of the Cadastre 2014 booklet. This was promoted for sale to members. |
| POL | Yes - it will be described below |
| SA | Yes. The Surveyors-General fully supports it and we are working towards the goals set. |
| SGP | Yes. |
| SWE | No. |
| SWI | Cadastre 2014 is a main issue for the technical section of IGS (the Swiss professional association of surveyors). IGS supports fully the 6 statements; it presumes a big potential for the private sector surveyors, and undertakes major public relation efforts. |

1b) Was "Cadastre 2014" translated in your national language ? If yes, please give some details (sponsor, available through, published by). Has the translation been distributed among the professionals and in what context ? Is it available on the Internet (if yes, what is the address ?)

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| AUS-NSW | Yes. It is in English. The document "Cadastre 2014" was circulated to all members of the Institution of Surveyors Australia in hard copy form. It is available on the internet at: http://www.swisstopo.ch/fig-wg71/ |
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| CAN-QUE | Cadastre 2014 is available in both official languages (french and english). |
| COL | No, it wasn't. We consult it through the web in English |
| CRO | No, it was not translated. |
| CZE | Yes. The "Cadastre 2014" was translated in Czech language in 1998 by the COSMC and distributed to interesting people from COSMC and members of CUSC for simple information as a publication of FIG. No special recommendation, activities or statements of professional association and authority were done. The Czech translation of this publication is available in secretariats of both institution, it is not on Internet. |
| FIJ | No. |
| FIN | Only the slides in ppt. format |
| FRA | There is a translation published by the Swisstopo organization, but non available on the net. |
| GER | Yes, thanks to our Swiss colleagues. It was not distributed but several information has been published in the journal ZfV of the National Association DVW. Links to the Commission 7 homepage are set under the DVW homepage www.dvw.de and a direct link to Working Group 7.1 is planned to be established in the next few weeks. |
| HGK | Yes, English. |
| HUN | Not yet, but we plan to do it |
| LIT | Yes, the translation to Lithuania has been done by the translators of the State Land Cadastre and Register. The translated version was distributed among the employees of the SLCR. Currently, the document is being prepared for printing. The Internet website is not available. |
| NZL | Yes - the national language of New Zealand is English. Maori is also an official language but I am not aware of any translations into Maori. The Cadastre 2014 booklet (in English) was printed, promoted and sold to NZIS members. Land Information NZ purchased copies for senior employees working in the cadastral area. There is no need to publish it on a New Zealand internet site as it is accessible through the FIG Commission 7 site. |
| POL | Abstract and parts of the Cadastre 2014 was published in surveyors periodicals in Polish - not available on Internet. |
| SA | Yes. English |
| SGP | Not necessary. English is our language of administration. |
| SWE | No. |
| SWI | The professional association translated it into German and French. It was distributed to all members and is available for CHF 20.- at their secretariat (Sekretariat IGS c/o Visura, Postfach 732, CH-4501 Solothurn). A summary is available on the internet at http://www.igs-gfsvbk.ch (German and French). |

1c) Has "Cadastre 2014" been presented in your country/state, and were there panel discussions or similar events ?

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| AUS-NSW | Yes. As a Discussion paper for the Cadastre in 2005. Cadastre 2014 was used as a base to formulate the "Bathurst Declaration" of the United Nations & International Federation of Surveyors "Land Tenure and Cadastral Infrastructure For Sustainable Development" |
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| CAN-QUE | Not officially in Quebec. |
| COL | Yes in a meeting in May, during the "First International Cadastral Systems Seminar" |
| CRO | No, it has not. |
| CZE | No. |
| FIJ | No. |
| FIN | See 1a) |
| FRA | The diffusion of the questionnaire was very bad. I think this is possible to obtain more answers but it would take several time. |
| GER | not yet |
| HGK | Yes, it has been discussed in the cadastral seminars in the HKPolyU. |
| HUN | No. The Hungarian Unified Land Registry system is the result of the integration of Cadastre and Land Record (Grundbuch) and follows all of the 6 statements of Cadastre 2014. |
| LIT | The EU Phare expert Angelo D'Urso presented the statements in the workshop "Land Market and the EU Membership" by comparing the European trends in cadastre development. These statements were also discussed together with Swedish experts, and during the conference of Lithuanian Surveyors Association held in autumn 1999. |
| NZL | The New Zealand Surveyor-General, Tony Bevin presented a paper ("Cadastre 2014 Reforms in New Zealand") to the NZIS national conference in October 1999. This is available at http://www.linz.govt.nz/services/surveysystem/osgpublications/cadastre2014reformsinnz.pdf |
| POL | It was presented and mentioned at every cadastral event - especially at the conference in September 2000 in city of Kalisz (Conference of Future of Cadastre in Poland) |
| SA | Not yet officially. It will be presented at the national surveyors conference in 2001. |
| SGP | We have been working on similar concept for a while. The public sector, the survey industry and the academics are contributing. |
| SWE | No. |
| SWI | <p>There were several presentations and activities concerning the project „Cadastre 2014“:</p> <ul style="list-style-type: none"> ▪ it has been presented at the general assembly of IGS on 10. June 1999; ▪ the professional association of surveyors presented a poster stand at the Geomatics-Days (annual assemblies of all surveying professions) in Thun on 4./5. May 2000 with emphasis on „Cadastre 2014“; ▪ a prototype of „Cadastre 2014“ has been developed by software firms a/m/t und C-Plan AG; ▪ letters to the chairmen of the regional chapters of the association in September 2000; ▪ presentations at the regional chapter assemblies Bern, Central Switzerland, Grisons, and further in Oct./Nov. 2000; ▪ presentation and discussion with responsible heads of the Federal Directorate for Cadastral Surveying and the Federal Inspectorate for Land Registration on 11. Oct. 2000 |

1d) Have working groups been set up in your country/state to further investigate "Cadastre 2014" issues in your national context ?

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| AUS-NSW | Yes. A Discussion paper for the Cadastre in 2005 has been formulated. |
| CAN-QUE | Not in Quebec. |
| COL | There is a Research Team at the Universidad Distrital in the academic program "Cadastral Engineering and Geodesy" This team receives cooperation from IGAC. |
| CRO | No, they have not. |
| CZE | No. |
| FIJ | No. |
| FIN | No |
| FRA | Of course not. This is the essential problem. There is a lot of work to be done because the French "géomètres-experts" are implicated in the cadastral system in France. |
| GER | DVW Commission 7 has a Working Group dealing with future aspects of cadastre in Germany. Cadastre 2014 plays an important role in these discussions but is not the major guide line. |
| HGK | No. |
| HUN | no |
| LIT | There are no special groups, but specialists of the SLCR know about these issues, and they were taken into consideration while drafting legal acts on real property. |
| NZL | Not formally to my knowledge. Land Information New Zealand's survey & title automation programme (Landonline) implements many of the proposals in Cadastre 2014. |
| POL | Yes - by Polish Association of Surveyors (SGP) - member of FIG |
| SA | No. |
| SGP | Not Cadastre 2014 per se. However, town planners, transport planners and utilities people are interested in our cadastre development. |
| SWE | No. |
| SWI | <ul style="list-style-type: none"> ▪ A "Cadastre 2014" competence center has been established (including a lawyer from the Federal authorities). ▪ The Canton of Bern has opened a contract for the extension of the basic cadastral surveying data model; public law restrictions and responsibilities such as construction limitations, legal forest boundaries, public waters will be included in the extended data model. ▪ The Canton of Basel-Landschaft has extended its cadastral surveying data model as well. ▪ Cantons of Fribourg, Neuchatel, and others have established a CAD-like information layer containing the public law restrictions and responsibilities. <p>...many more activities are going on...</p> |

1e) Is "Cadastre 2014" known and been acknowledged outside the surveying profession ? If yes, in which ones ?

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| NSW | |
| CAN-QUE | Not as I know. |
| COL | Yes all the people involved in the GIS field should acknowledge it, also the lawyers that work in titling. |
| CRO | No, it is not. |
| CZE | No. |
| FIJ | No. |
| FIN | No |
| FRA | No, because of the bad information. |
| GER | No, not as far as I know. |
| HGK | No. |
| HUN | We try to promote the ideas of Cadastre 2014 to other professionals especially to lawyers. |
| LIT | I am not sure but so far this publication might not be acknowledged outside professional bodies. Employees of the SLCR (computer specialists, programmers) are well aware of it. The SLCR is going to publish "Cadastre 2014" in Lithuanian for general public. |
| NZL | Not significantly to my knowledge except insofar as government had already started to implement some of the institutional structures and systems proposed in Cadastre 2014 prior to its publication. |
| POL | No - as far as I am concerned. |
| SA | No. |
| SGP | No. However our cadastre is also known to real estate industry, construction industry and the IT professionals who are interested in spatial data, location. |
| SWE | No. |
| SWI | Surveyors are promoting the ideas of "Cadastre 2014" in the Federal and cantonal authorities for cadastral surveying, justice, civil engineering, forest, and land use planning. The Swiss association for wastewater treatment has acknowledged the statements as well. The awareness and acceptance of the "Cadastre 2014" statements is increasing more and more. |

2. Status of the 6 Statements

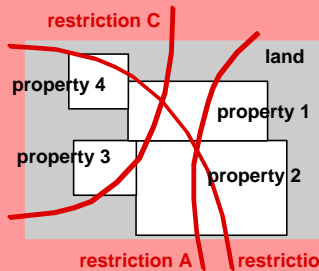
Please, comment the 6 statements from your country/state point of view, what the status of the statement is, how you rate its value, and any relevant critics or observations to it.

Statement 1):

Cadastre 2014 will show the complete legal situation of land, including public rights and restrictions!

Statement 1 on Cadastre 2014

Cadastre 2014 will show the complete legal situation of land, including public rights and restrictions!



Comment: The population of the world is growing. The consumption of land is increasing. The absolute control of the individual or of legal entities of land is increasingly being restricted by public interest. To provide security of the land tenure, all facts about land must be made obvious by the cadastral system of the future.

Consequences: A new thematic model is necessary. Surveyors must take into consideration public law.

2a) Are public rights and restrictions already included in your cadastre, or will they be in the near future? What is your comment relative to statement 1) from your country/state point of view?

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| AUS-NSW | <p>The NSW cadastral system records fiscal and legal interests the land. Generally, it does not include natural resource / environmental or planning interests such as planning zones, water rights, geological or mineral rights, vegetation rights, aquaculture or marine rights, etc.</p> <p>Governments, communities and industries must have access to all information regarding land. That information must be his integrated, current, accurate, reliable, accessible, understandable and transferable.</p> |
| CAN-QUE | <p>This concept does not exist on the private part of the territory.</p> <p>On the public part of the territory (covering 92% of the total area of the province), we have started the reform of the registration of rights on public lands. This reform is a process designed to establish a public register of land in the state domain. The register will, in practice, constitute a single service point for the registration and consultation of all rights affecting public lands granted by the state, and of the constraints and protected areas defined by the Government. The register will allow public bodies that grant rights to consult, via the Internet, all the rights that affect a particular area of public land before granting any new rights. It will act as a complement to the <i>Land Register</i> for all lands under public ownership, besides constituting a complete inventory of all state property.</p> <p>The land register of land in the public domain will be based on a spatial reference system, and updated systematically. However, in contrast to the Land Register for land under private ownership, in which each right is linked to a particular lot of the cadastre, the register for land under State ownership will not require the prior immatriculation of the land to which a right relates. The description of a polygon based on the national coordinate system will be considered sufficient for the registration of a right in the register of land under State ownership.</p> <p>The computer-based register will:</p> <ul style="list-style-type: none"> • facilitate access to information on land by all users of public lands; • reduce the cost of activities requiring knowledge of the land base; • promote better management of public lands and the resources they contain. <p>The reform should be completed by 2003.</p> |
| COL | <p>In Colombia already exists public rights and registration, specially in the cities and natural parks. But the information about the "legal land objects" is not included in the Colombian Cadastre, this information is sometimes included in the Register.</p> |
| CRO | <p>The Law of State Survey and Real Estate Cadastre came in to force and is being applied since 1st March 2000. It is intended to help in the creation of high quality, reliable and updated spatial databases (spatial documentation) based on new geodetic base, and to provide legal security of real estate ownership in the Republic of Croatia. According to the Law cadastral offices not record land parcels in a traditional way, but as a part of land with special public rights and restrictions.</p> |

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| CZE | <p>The real value of this statement (Statement 1) is nearly zero, because absolute completeness of legal situation without any reasonable specification is pure nonsense. It would be nice, but public rights and restrictions are too wide in praxis, to be feasible to embrace them reliably and completely in one database for reasonable cost. To gather and reliably update such legal information is beyond the possibilities. It is necessary to try to define the term complete legal situation. Only a part of existing restrictions is defined geometrically (or related to the objects maintained in the cadastre) to be possible to represent them clearly as land objects. The most of public laws (especially connected with traffic, waters, energies, telecommunications, etc.) are created to describe restrictions very generally on purpose, because it is convenient and the only way known how to define them in their completeness.</p> <p>Instead of "all-embracing cadastre" (with doubtful responsibility and feasibility) the concept of many specialized individual, but linked together, databases should be adopted. Every authority maintains its own information (reliably and with clear responsibility within its competencies) and users can benefit from all of these databases and choose information according to real needs. High level of standardization is necessary. The information kept and maintained in every of these databases has to be limited and focused on the most relevant ones (according to possibilities both to clearly define it and to cover the costs). But this is not yet a concept of only cadastre itself, but of many wider information system of state administration, in which the cadastre provides unified localization base.</p> |
| FIJ | No. |
| FIN | <p>We have already part of them, for example the boundaries of detailed city-plans. We will have a more of them in the future (appr. 5 years).</p> <p>Statement 1 is relevant.</p> |
| FRA | <p>In France, the cadastre does not include public rights and restrictions. The public rights are defined directly by French State with national directives and in each country or land definition like district. It is the same case for restriction. We have a synthetic document, made by the authority of the districts, which groups together these information.</p> |
| GER | <p>Several indications to public rights and restrictions are stored in the descriptive data in the cadastre but it does not give an complete overview of all rights and restrictions and it is not available in graphic form. The establishment of a complete documentation of all rights and restrictions will be a great task for the future. It would be very helpful for all people acting in the Land Market. Maybe we'll have something like that with Meta Data Bases in the near future.</p> |
| HGK | No, there are many overriding interests in forms of ordinances or customary rights. |
| HUN | <p>The Hungarian Unified Land Registry system shows the complete legal situation of land including public rights and restrictions. Our view about this statement is positive and we find it very important and essential.</p> |
| LIT | Land, buildings and structures, apartments and real rights (except mortgage), restrictions on these rights, obligations are registered in one Real Property Register. Registration is carried out by the State Enterprise – State Land Cadastre and Register. |
| NZL | <p>All of the rights and restrictions that are registered on land in the Torrens system are part of the historical paper based cadastre. This will join the digital cadastre in the automated survey & title system (Landonline) which has been in development since 1996. Rollout commenced in April 2000 and will be complete across New Zealand in 2002. The importance of this to New Zealand is indicated by the substantial investment by government and stakeholders in this system. Rights and restrictions over Crown land are not fully contained in the digital cadastre but the Landonline data model allows for their inclusion in the future.</p> |

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| POL | Yes, they are - it works for many years already very fruitfully. |
| SA | Not all of them. We are not planning to add everything. Maybe later when the present priorities have been met. |
| SGP | They are in our cadastre. |
| SWE | Yes, the Swedish cadastre includes information on public land use restrictions. |
| SWI | Public rights and restrictions are already, although only partially included in the cadastre. Their inclusion will further be promoted; the finalization although will be medium- to long-term, as the regulatory legitimating has first to be put together and complemented. The surveyors support very much the inclusion of the public rights and restrictions. The problem of the publicity principle needs to be solved ("what is not in the plan, does not exist"). |

2b) Does your cadastral system document both rights from "private law" as well as restrictions from "public law" ?

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| AUS-NSW | No. The register for recording "private law" is centralised, while there are many registers or sources for "public law" that are not integrated with each other or the "private law" register. |
| CAN-QUE | On the private part of the territory, legal restrictions established by the provincial and Federal governments are registered in the land register for the land file of each lot affected by the restriction. There is also, in each municipality, a zoning regulation, which establish land-use for each sector of the city. On the public domain, with the reform above mentioned, the public register of land in the state domain will show all rights granted or acquired and all constraints and protected areas defined by the Government. |
| COL | Is documented in GIS and appears on the private /public deed. No cadastral authority have documented the restrictions from public law, for example the customary rights are seldom documented in a way that creates the necessary legal security. |
| CRO | Yes, it does. |
| CZE | The Czech cadastre documents <i>only selected rights from "private law"</i> (ownership rights, mortgage, rights corresponding to easement, right of first refusal having effect of right <i>in rem</i> , and other rights as far as they are created as rights <i>in rem</i>). The objects of these rights are land, buildings and flats. The cadastre as well documents in some cases even some protection areas but without detail description of rights and restrictions (e.g. national parks, protecting zones, natural and cultural preserves, etc.). |
| FIJ | Private law only. |
| FIN | Rights from private law and partly restrictions from public law |
| FRA | French cadastral system gives more importance to private law. The boundaries are not certified by cadastre service and by correlation the process of verification is impossible. Cadastre is only a presumption of private boundaries. Public law is not certified by French cadastral system. The reference document is a sort of Local Town Planning made by districts' authorities. A document in which both information will be included will be a big guarantee even for private interest but for professionals too. |
| GER | Private rights and restrictions are documented in the Grundbuch. Restrictions based on public law are not documented totally, only some by law (e.g. areas of land consolidation projects). There are no laws generally fixing this subject. |

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| HGK | Public law only. |
| HUN | Our system documents both rights from "private law" as well as restrictions from "Public law". |
| LIT | Yes. Both – rights from "private law" and restrictions from "public law are registered in the Real Property Register". Mortgage is registered separately. |
| NZL | The Landonline system will incorporate the central government component of the cadastre which is principally related to rights in private law (ie those registered in the Torrens title system). It will also include administrative areas such as electorates and local authority boundaries which I think fall within the definition of public law. Areas related to planning and resource consents are administered separately by individual local authorities. These local authorities use the current digital cadastral database or the upcoming Landonline database as a base layer for these public law areas. The extent to which these are closely integrated with the digital cadastre varies from local authority to local authority. Development towards a physically and administratively distributed, but logically integrated, database of public law and private law rights and restrictions can be expected in the future. |
| POL | There is no private law existing in Poland. |
| SA | No. |
| SGP | Our cadastre is based on "private law". |
| SWE | Yes. |
| SWI | Private law: areas with defined boundaries of land ownership; no mines, water source rights, water use rights, rights of way, fishery rights, etc. Public law: partially; the Cantons maintain isolated data sets for environmental protection, hazardous and protection zones, etc. |

2c) Is the concept of land objects adopted in the set-up of your cadastral system ? If yes, how?

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| AUS-NSW | The concept of the "land object" is being introduced into land information systems in New South Wales. Traditionally the cadastral system was based solely upon "land parcel" however, with improving computerisation other rights and/or restrictions are being integrated. Example, Native Title, large infrastructure easements. |
| CAN-QUE | On the private part of the territory, the concept of legal land object doesn't exist. The legal restrictions are registered in the land register under the land file of each cadastral lot. On the public part of the territory, the public register of land in the state domain will contain each restriction or right will be registered as a legal land object. |
| COL | The concept of parcels exists. No, our cadastral system doesn't have laws included that define rights and restrictions which are related to a fixed area. We have land parcel concept, no land object concept. |
| CRO | Yes, it is. According to the Law cadastral offices not record land parcels in a traditional way, but as a part of land with special public rights and restrictions. |
| CZE | The concept of "land objects" is not adopted in our cadastral system. The objects kept in the cadastre are only parcels and buildings. The only exception are boundaries of protected areas which needn't follow strictly boundaries of parcels (in such cases must be documented by measurement). |

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| FIJ | No. |
| FIN | In our system you can say that we have adopted the concept of land objects. The basic entity is the parcel, but you can have a look at the parcels together with other spatial data. |
| FRA | French cadastral system is only build to certify the land taxes. The guarantee of property is registred by the "hypothèques" service which is the mortgage security. The boundaries are only certified by a private boundary marking done by a "géomètre-Expert", private surveyor agreed to make certificate. |
| GER | No. Germany is on the way of modeling the cadastre in an object-oriented way with the new ALKIS [®] project but it will not follow strictly the idea of land objects as stated in cadastre 2014. |
| HGK | Not yet set up. |
| HUN | We use the concept of land object. |
| LIT | In Lithuanian laws we have the concept the real property object rather than the land object. The Law on the Real Property Cadastre of Lithuania sets forth the following definition of the real property object: "Land and other properties that are related to land and that may not be transferred to another location without changing the purpose of their use or considerably diminishing their value (buildings, premises, flats, engineering facilities and other properties which are intended to serve and to be used as immovable property), and that may be described as separate properties following the procedure established by the Keeper of the Real Property Cadastre". |
| NZL | The conceptual distinction of the land parcel and the land object is not completely clear to me but implies that the relationship between rights/restrictions and the geometric objects known as parcels is more flexible in the land object definition than in the land parcel definition. The Landonline conceptual data model defined at an early stage included a "Right Area" entity to define the many-to-many relationship between rights or restrictions and the geometrically defined parcels or areas over which they apply. This also allowed for multiple and overlapping layers of parcels as required. The implementation of the Landonline physical data model to efficiently deliver required business needs has necessarily limited the full flexibility of the conceptual model but the fundamental concepts are still part of the design and greater flexibility can be re-introduced later as required. |
| POL | Yes - it embraces land, building and premises. |
| SA | Yes. The cadastre shows not only the picture, but also all registered rights over the properties. |
| SGP | Land parcels are demarcated on the ground. The evidence of ownership and tenure is shown on the land title supported by the survey plan of the parcel. |
| SWE | Difficult to understand. The concept in Sweden is the real property unit, which can consist of several parcels of land and of other rights, for instance fishing rights in a lake. I assume this can be counted as an object. |
| SWI | Parcels: yes. Land objects: partially. There are many land objects of which only the contents of the right are defined, but not their boundaries. |

2d) Is the principle of legal independence adopted in your cadastral set-up ? If yes, how ?

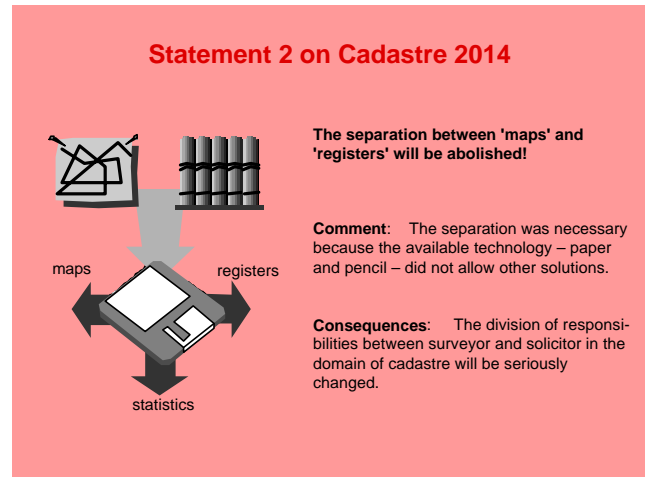
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| AUS-NSW | Yes, for "private law" only. There are differing principles & procedure for recording differing interests. Example, "Old System Title" (land not under the Real Property Act), Torrens Title (land recorded under |
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| | the Real Property Act, Easements or restrictions as to use of land, etc. |
| CAN-QUE | The Government has adopted a common reference system in which every governmental institution produces its data. Each institution is responsible of its data. For example, the cadastral plan is under the responsibility of the Direction generale du foncier and contains only cadastral data (measurements, area, geometry, and boundaries). The topographical map is under the responsibility of the Service de la cartographie and contains only technical data (topography, hydrography, buildings, etc.) and so on. But these maps can be superimposed because they are in the same common reference system. |
| COL | It's not clear yet, specially the environmental issues. The environmental legislation in Colombia is new, besides there are local rights. Because our Cadastral system is based on land parcel concept, the individual or special data lawyer for every adjudicative process of legal land objects is not adopted. |
| CRO | It is only partly adopted in our cadastral set-up. (We collect the data about collective land rights and land property) |
| CZE | The principle of "legal independence" is not adopted because practically the whole content of the cadastre should be in one layer (being created within one administration, both rights and maps with parcels). In fact, there are many layers and they are used for the cadastre. But there are some exceptions, e.g. boundaries of protected areas, which are in separate layer. |
| FIJ | No. |
| FIN | In our GIS-system it is possible to register different objects and also topographic data in vector format, so you can combine the objects freely. |
| FRA | This principle is not integrated in our cadastral system. It would be better. |
| GER | Most state survey acts define cadastre as the only basic geographical information system in the state. Other information systems have to use it as their reference system. The layer structure of Cadastre 2014 is therefore not physically established in one system but can be built up by linking different data. This sounds easy and it is theoretically possible but needs standards for geographical data. |
| HGK | Yes, individual ordinance will have indication on the area affected using map or plan. The overlaying service is not yet available to the general public. |
| HUN | -- |
| LIT | Recently the Law on Cadastre has been adopted and will come into force on January 1 2001. The Real Property Law regulates the principles for keeping the cadastre of land parcels, buildings and other real property and the procedure for recording real property data into the Real Property Cadastre Databases. It defines legal status of the Real Property Cadastre, rights, duties and responsibilities of the institutions, natural and legal persons managing this cadastre. |
| NZL | The above layers are managed by several different agencies in New Zealand with varying levels of integration. Some are managed by central government and some by local government. The cadastral database is generally used as a base layer by the other agencies who manage their own data in relation to the cadastre (with the exception of topography which is currently managed independently of the cadastre). |
| POL | Yes - it stems from the constitution and civil code. |
| SA | -- |
| SGP | Yes. The starting point is the cadastral maps of all land parcels maintained by the survey authority. Other agencies use the same maps for land use planning, transport, utilities, physical development. |
| SWE | Difficult to understand. Who is legally independent from whom? Of course rights are connected to different groups of claimants or more precisely owners. |

SWI Separation in layers: yes.
Legal independence: not everywhere; public law restrictions are in many cases only grouped according to geometric criteria, but not according to thematic or legal criteria.

Statement 2):

The separation between 'maps' and 'registers' will be abolished!



2e) Are the organizations of 'maps' and 'registers' still separated or are they integrated ?
What is your comment relative to statement 2) from your country/state point of view ?

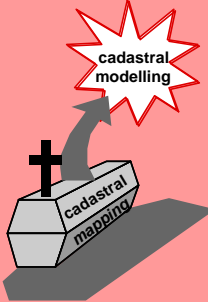
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| AUS-NSW | All legal, spatial and fiscal information relating to land within New South Wales is within the "Department of Information Technology and Management" The departmental organisation has amalgamated various aspects of land information. The registers and maps are currently still separate but are capable of being intergated. New South Wales is pursuing reform actions to achieve "Statement 2". |
| CAN-QUE | A law will probably be passed soon in which the Government will merge both organizations (cadastre and land register). |
| COL | They are separated at the moment. There is a team working for its integration. This has been a very slow process, because there is no political decision and the technological link between the institutions is very poor. |
| CRO | An organization of 'maps' and 'registers' is still separated in the Republic of Croatia. Cadastre offices are part of the State Geodetic Administration, while the Land register is in domain of the Ministry of justice |
| CZE | Since 1964 the <i>land registry and the land cadastre are integrated</i> within one institution. But the principle abolishing separation between maps and registers is being involved gradually now, according to level of digitisation of cadastral maps. New cadastral software integrates both maps and registers. Nevertheless, maps and registers are still in fact separate components of the fully digitised cadastre (being linked together). |
| FIJ | Still separated. |
| FIN | Integrated. Statement is no longer important for Finland (fulfilled) |
| FRA | Yes they are. And in our state, it would be very difficult to join them together. They are separated since the beginning of the 19° century. It is necessary to group them. |

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| GER | They are still separated but with the ALKIS® data model the separation will be abolished. For users of an Internet presentation of cadastral data it looks as if they are already integrated but physically they are not. Grundbuch and cadastre are still separated and will be for the next few years. Political discussions in a few states did not succeed to bring both jurisdictions together. We are still working very hard to establish an interface for both systems so that users have the impression of unique system but it will be a long and hard way. |
| HGK | Not yet happened. In fact, there is only 'register'; 'map' is a supplementary document to the deeds. |
| HUN | The Hungarian Unified LR. has been integrated organisation since 1972. |
| LIT | Mapping organisation is working separately and produces topographic maps in scale 1:10000 and smaller, but one institution is responsible for cadastral maps and attributive cadastral data. Currently, integration of attributive – legal and graphical data is carried out. The State Land Cadastre and Register is responsible for this work. |
| NZL | Landonline is integrating the survey and title systems. Conversion of survey and title data to this system started in 2000 and will be completed in 2002. |
| POL | They are and always were integrated. |
| SA | The Cadastral Survey and Deeds Registration functions are still separate, but in the same Ministry. We are working towards integrating the datasets. |
| SGP | We are separated but under the same Ministry. The thinking is towards integration of the organisations. |
| SWE | They are integrated through links between the Land Data Bank system and different kinds of geographic databases. |
| SWI | From the legal effect, the organizations are still separated. The land ownership records of the surveyors are only auxiliary records without legal effect. In other thematic areas (land use planning, forestry, hazardous and protection zones, water resources atlas), more and more databases are complemented with textual data. The legal effect in all these areas, however, still remains with the analogue plans and registers. |

Statement 3):

'Cadastral mapping' will be dead! Long lives modeling!

Statement 3 on Cadastre 2014



The Cadastral mapping will be dead! Long live modelling!

Comment: Maps have always been models, but the available technology did not allow for the use of these models in a flexible manner. So in mapping flexibility had to be brought in by different scales. Different scales had to be represented by different data models.
Modern technology allows the creation of maps of different scales and registers in different forms from the the same data model.

Consequences: In 2014 there will be no draftmen and cartographers in the domain of cadastre.

2f) Does data modeling play a role in your national Cadastre ? In what respect ? What is your comment relative to statement 3) from your country/state point of view ?

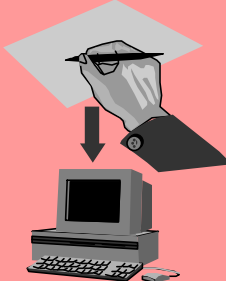
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| AUS-NSW | Yes. For the integration of data and the production of specialised products. |
| CAN-QUE | Yes it is. The renewal of the cadastral product's form and legal status, as well as the control methods used, has completely transformed the way in which the cadastre is managed. Emphasis has shifted from management of parcel plans to administration of a cartographical database. The cadastral database is in fact a huge, continuous map of all land in Québec that has been registered in the cadastre – in other words, an area of 117 000 km ² . The map shows the four million or so properties that make up the cadastre. It contains a set of geometric and descriptive data for each property (or lot). |
| COL | Yes, the cadastral authorities have defined the data model CO-25 and CO-U with reference to the ATKIS model, which included the cadastral component in Urban and rural areas. Its an unofficial model for other cadastral authorities but they are starting some works based on this. |
| CRO | Our Cadastral offices, together with Land register offices conduct a digital database what is a first step to the data modeling in the future. |
| CZE | The “data modelling” (if it means data storage by co-ordinates in computer files without use of paper and their representation according the real needs) had been involved into cadastral mapping about 20 years ago. If it should means something more, like creating virtual objects (which are not measured in reality, but only represented by non-measured co-ordinates), such “modelling” is not involved into the cadastre, and we hope it will be so even in future. But there is some pressure from the Ministry of Agriculture to carry-out in the cadastre certain “land consolidations”, which are projects only, without any measuring in terrain (so called “virtual land consolidation” without any setting out projects in terrain – only representing the decisions in maps). Theoretically, it is technically possible, but to do „land consolidation without land consolidation” is without any sense (owners are without three basic attributes of ownership: a) couldn't keep the land, b) couldn't use the land and c) even disposition with land is very limited). |
| FIJ | Fiji Land Information System does have data modelling but this is limited to cadastral plans. |
| FIN | We have been modeling when developing the system. Statement is no longer important for Finland (fulfilled) |
| FRA | It is the same problem than the separation. Even if private surveyors product modeling about 15 years ago, the national service of cadastre can't use it ! |
| GER | Yes. ALKIS [®] is modeled for an object-oriented data base. It is modeled using ISO standard UML. ALKIS [®] is recently the most important project in German cadastre. |
| HGK | Yes, the survey department recently runs a study on the new cadastral database, so as to replace the existing digital mapping system. |
| HUN | The digital cadastral mapping program started in 1995 but it's a very long, costly program. The data modeling as a concept is accepted but the technical implementation takes a longer time. |
| LIT | Currently, maps on sheet paper and digital cadastral maps are used. 80 per cent of Lithuania is covered by new orthophoto maps made on sheet paper and digital form in scale 1:10000, 1:5000 . These maps are used for producing cadastral maps. Gradually we are changing to digital maps, but not all the users can adopt these maps, due to the lack of proper equipment. The real property cadastral map is defined in the Law on the Real Property Cadastre as follows: “the real property cadastre data, that describes the location of the real property, its qualitative and quantitative characteristics and distribution of different real property objects in the National System of Geodetic Coordinates where this information is expressed in text, digits, graphical elements and cartographic data”. |
| NZL | Landonline includes a single survey and title data model. The role of cadastral mapping and GIS tools is now principally limited to that of providing a spatial view of the data in the cadastral data model. |
| POL | It is not reaching the satisfactory level in Poland - but the works are going on. |

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| SA | -- |
| SGP | Yes. We are switching to a coordinated cadastre. Parcels will be defined by coordinates of boundary points. Users still prefer the map to see the points, the lines, the polygon, the location. |
| SWE | Maps are stored in geographic databases, which makes it less interesting to talk about a specific map. There are different geographic databases for different scales, large scale - small scale. |
| SWI | Data modeling is increasingly used in the area of land ownership, water supply, wastewater, electric cabling, and even road administration. Data modeling is neglected in the area of land use planning; however, this is linked very much with regionalization of the responsibilities in this area. Data modeling is very much supported by well-established associations or cantonal binding regulations in the first areas, while data modeling in land use planning is hampered by the highly communal responsibilities. Regarding the professional associations, surveyors and information technologists are using the data modeling approach, while civil engineers, architects, land use planners, and others use more the "CAD" approach. |

Statement 4):

'Paper and pencil cadastre' will be gone!

Statement 4 on Cadastre 2014



'Paper and pencil - cadastre' will have gone!

Comment: Geomatics technology will be the normal tool for cadastral work. Real low-cost solutions are only possible when this technology is used in combination with lean administrative procedures. Developed, developing, and transitional countries need models of the existing situation to resolve the problems of population, environment and reasonable land use.

Consequences: The modern cadastre has to provide the basic data model. Surveyors all over the world must be able to think in models and to apply modern technology to handle such models.

2g) Do 'paper and pencil' still play a role in your cadastre ? What is your comment relative to statement 4) ?

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| AUS-NSW | Yes, pencil & paper do play an important role and will continue for some time, unless there are favourable changes to pricing policies that make it more attractive to take up E-business. Only large surveys creating many new land parcels favour a modern cadastral system. Only 10 – 15 % of surveys create more than 10 lots. Therefore, any new system must be able to efficiently create the geometry and administration files from any survey design package. That file must be compatible with the final plan. At present this is difficult with double handling of information. |
| CAN-QUE | There are no more paper and pencil in our cadastre. The ministère des Ressources naturelles decided to use the request for a cadastral operation as the means of updating the cadastral database. The request is drawn up by a private land surveyor, on behalf of the landowner and in accordance with the instructions issued by the Minister responsible for the cadastre. The process of keeping the cadastral database up to date involves exchanges of data between the Department and its land surveyor clients. To manage these exchanges effectively, the Department has developed an automatic electronic mail application that uses the Internet network as a communication vehicle. The unit operates as shown in Figure 4. Among other things, it can provide the following services without the need for human intervention: <ul style="list-style-type: none"> • extraction of official cadastral data; |

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| | <ul style="list-style-type: none"> • pre-validation of cadastral operation files (service reserved for land surveyors). Pre-validation enables land surveyors to check that their applications for cadastral operations contain all the necessary data, and that the map submitted is a faithful reflection of both the land division and the measurements or other information shown on the cadastral parcel plan. It also ensures that the proposed new data are consistent with those already in the cadastral database. Following pre-validation, a report is sent to the land surveyor, stating whether or not the files are in compliance, and if not, giving the reasons why they have been refused; • transmission of cadastral operation files for officialization (service reserved for land surveyors). |
| COL | <p>Yes, all the cadastral authorities are working with "pencil and paper" these organizations have several physical files (not digital) even though they have cadastral GIS. For bookkeeping they need to handle maps and registers in paper.</p> <p>Our country majority doesn't have the computer assisted work culture, most citizens believe only in paper documents.</p> |
| CRO | <p>Yes, paper and pencil still play a role in our cadastre, but we intend to change it in the future.</p> |
| CZE | <p>"Paper and pencil" play still a certain role in our cadastre because about 80% maps are still not in digital form (not on paper but on plastic foils). Even after completing digitisation of maps (planned by 2006) we will probably still need original written deeds on paper with signs. Certain conservatism in things like a cadastre or registers of births is probably right. Though an electronic sign law has been accepted in our country, following new law on register of births requires the registers have to be kept still in paper form (people comes and go away, but the land remains, or vice versa?).</p> |
| FIJ | <p>Yes. By 2014 Fiji should have modern data models.</p> |
| FIN | <p>No, fully automated.</p> <p>Statement is no longer important for Finland (fulfilled)</p> |
| FRA | <p>Paper and pencil are still used in our cadastral system.</p> <p>The actual technology is better than this old system. Private surveyors are ready to work on the net to certify boundaries in a national planning yes, but a modeling one.</p> |
| GER | <p>No. Even if cadastre is not yet completed in digital form (most urban areas are 100 % digitized) analogue forms are not the state of the art.</p> |
| HGK | <p>That is for certain. Records in the Land Registry and survey department are fully computerised.</p> |
| HUN | <p>The paper and pencil still play role in the updating of maps where the digital cadastral map is not existing yet. New cadastral maps can be produced in digital form only.</p> <p>We expect completing the digital cadastral mapping program before 2014.</p> |
| LIT | <p>"Paper and pencil" is used less and less frequently. All legal data on real property is stored and updated in digital form. Cadastral surveys and preparation of cadastral data are usually in paper form, but computers are used as well. Computerisation is growing quite rapidly, and "paper and pencil" constantly becomes less and less important in cadastre.</p> |
| NZL | <p>Paper based survey plans are still lodged due to legislative requirements which are being reviewed. Current plans are to enable digital lodgment of cadastral surveys in 2002. Initially, paper lodgment will still be supported for a transition period of probably a few years. Eventually, digital lodgment is expected to become mandatory. Note that digital lodgment in this context refers to structured data files that can be loaded directly into the database – not image files or CAD files which are essentially just a digitization of a paper based system. However some supporting documents or survey plans that are mainly graphical in nature may still be lodged in image file form.</p> |
| POL | <p>Yes - as said previously - but it concerns only the maps.</p> |
| SA | <p>We still use the paper cadastre, parallel with the digital one, until such time as the integrity of the digital</p> |

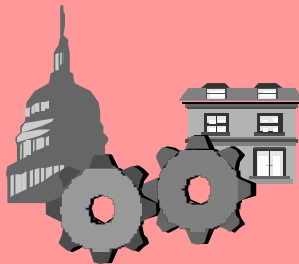
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| | database is beyond reproach. |
| SGP | 'Paper and pencil' is being phased out. It is now used in parallel with the computer keyboard. |
| SWE | No. |
| SWI | No. In cadastral surveying with tasks in spatial related planning and administration, only the existing analogue plans are maintained with the traditional tools; new tasks are accomplished with scanned, CAD, or increasingly GIS data. |

Statement 5):

Cadastre 2014 will be highly privatized! Public and private sector are working closely together!

Statement 5 on Cadastre 2014

Cadastre 2014 will be highly privatized! Public and private sector are working closely together!



Comment: Public systems tend to be less flexible and customer oriented than those of private organizations. Free economies demand flexibility in land markets, land planning and land utilization. Flexibility may be provided better by private institutions. For necessary security, however, public involvement is indispensable.

Consequences: The private sector will gain in importance. The public sector will concentrate on supervision and control.

2h) Is there a private sector in your country/state doing work for the cadastral system ? Are public and private sectors working together ? What is your comment to statement 5) from your point of view ?

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| AUS-NSW | Yes. The majority of all surveys (approx 90%) are undertaken by surveyors in the private sector in accordance with standards specified by the Surveyors General using advice from a joint advisory board, The Board of Surveyors. The private and public sectors do not work together all that much, nor do they compete against one another. The free economy may demand a system that is flexible, but any new system that is based upon data modeling and rigorous connections or comparisons of data fields will be much more rigid and inflexible than any present system. Although, after the data has passed the various quality control tests, it will have far greater integrity with a far greater input cost. |
| CAN-QUE | In Quebec, the cadastral operations are realized by private land surveyors. A public organization manage the cadastral database, establishes standards and control the legal validity of each cadastral operations. The management of the cadastre and the land register is a State mission. It can't be privatized. But private land surveyors can play a major role to realize all the necessary operations to keep the cadastral database updated. |
| COL | In Colombia the cadastral work is done by the public sector and it is a law. Yet public organizations exchange some cadastral activities with the private sector. |
| CRO | All major geodetic work is manufactured by the private sector, but conducting of official registers, in the near future will stay in domain of the state Administrations |
| CZE | Co-operation between private and public sectors exists. All the subdivision plans are made by private sec- |

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| | <p>tor (more than 100 000 per year). But a new cadastral mapping and overworking of existing cadastral maps into digital form is done solely by public sector. Since the new cadastral mapping is very limited, it is possible to say that the private sector is the creator of new maps (by means of changes). Privatisation of the cadastre is possible and may be attractive for a certain kind of monopoly, but it is not necessary. There are many models of organisation of cadastre and some are very efficient, even under public sector. The most important is the final result for users and guaranties (the second is very limited within private sector). Theoretically, even parliaments and courts may be privatised to be more flexible (and, probably, somewhere they are in some extent), but everybody feels that it would not be OK.</p> <p><i>Notice: In our country it seems, that the statement about higher flexibility of private sector is not truth, because the result of huge development of private sector in last years (great firm with excellent equipment) is, that they are demanding more and more works paid from public budgets (never matter if really needed or not).</i></p> |
| FIJ | Yes. Predominantly private sector. |
| FIN | <p>The work is mostly carried out by the public sector. Only technical part in subdivisions (measurement of new boundaries) can be contracted to the private sector.</p> <p>Co-operation is working quite well.</p> <p>I do not think that we will go to high privatization, because the customers have been quite satisfied and there is no pressure from the private sector to offer more services on the cadastral field.</p> |
| FRA | <p>The private sector, the private surveyors agreed by the cadastre, makes the documents and the public sector, the cadastre, makes the registration which is certified by the mortgage security service.</p> <p>We work together, and this is a guarantee for the quality of registration.</p> |
| GER | <p>The private sector (licensed surveyors) plays a key role in Germany (except Bavaria). Most cadastral surveys are carried out by the private sector in most states. The cadastral maps and records are in the hands of the public sector as well as the distribution of the data. The marketing aspects of digital geographical information are in a developing phase. Some co-operation between the public and private sector have been settled recently.</p> |
| HGK | <p>The Land Registry is a 'trading fund' government department. She has to earn her own expenditure. For the survey department, there is now a government proposal to 'corporatise' the department. The corresponding ordinance is scheduled to pass in this December.</p> <p>In Hong Kong, the government will keep the bulk part of the cadastral services, although some small portion of the services will be contracted out to the private sector.</p> |
| HUN | <p>All new cadastral mapping and cadastral survey works for updating cadastral maps have been done by private sector.</p> <p>Updating of cadastral maps is state responsibility in Hungary.</p> <p>We agree the concept of this statement.</p> |
| LIT | <p>Cadastral land surveying activities are carried out by private and public surveyors. The surveyor's status, rights and responsibilities are defined by the Law on the Real Property Cadastre. Cadastral surveying on land is also carried out by private and public surveyors. It has been provided for that interests of surveyors will be protected by the Chamber of Surveyors which will also take care of the surveyors' qualification. In future, it is planned that private surveyors would be carrying out not only land surveying but also cadastral surveying of buildings, flats, engineering facilities and other cadastral activities.</p> |
| NZL | <p>Yes. Cadastral standards and policies are set and managed by the government. Cadastral surveys compliant with these standards and policies are undertaken by the private sector. They are then lodged with the government for approval.</p> <p>Records and databases are managed by the government and copies are provided to the private sector. Distribution of the database in bulk is undertaken by private data distributors – the government effectively taking a data wholesaler's role supported by data retailers. Development of the new Landonline system has been undertaken on contract to the private sector with the government providing overall management</p> |

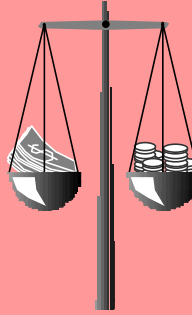
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| | and a high level of cadastral system experience to the projects. |
| POL | Public and private sector are working together - with bigger part being in state's services hands. |
| SA | Yes, all cadastral surveys are carried out by private practicing land surveyors. The State only controls and archives the documents. |
| SGP | There is a private sector doing work for the cadastral system. The public sector exercises regulatory control and serves as a depository of private sector work. One obvious advantage is for creating a reliable cadastre database for certainty of land ownership and for overlaying other GIS layers. |
| SWE | No, the cadastre and cadastral updating will remain a governmental responsibility. Private sector will mainly be involved in data capture and as consultants for system development. |
| SWI | Land ownership cadastres in German and Italian speaking Switzerland are mainly administered and maintained by contracted private land surveyors. In French speaking Switzerland, this task is mainly done by the cantonal authorities. Other cadastres (hazardous, protection, land use zoning) are established by the private sector, and administered and maintained by public authorities. The authorities seem to have a problem with statement 5, as they seem to presume that spatial data in the property of taxpayers have to remain in the hands of the public authorities. In several Cantons, there are initiatives to establish cantonal data centers with absolute competences for data administration, and to entrust the traditional data maintainers only with the task of data updating and querying. The issue of "federative" distributed large databases doesn't seem to be attractive in these authorities. The strive in these tendencies seem to be strongly correlated with the political party membership of the responsible Ministers. |

Statement 6):

Cadastre 2014 will be cost recovering!

Statement 6 on Cadastre 2014

Cadastre 2014 will be cost recovering!



Comment: Cadastral systems need considerable investment. But the land documented and secured by the cadastre represents a multiple of the investment. The investment and operation costs have to be paid back at least partially by those who profit.

Consequences: Cost/benefit analysis will be a very important aspect of cadastre reform and implementation. Surveyors will have to deal more with economic questions in future.

2i) Is your cadastre cost recovering now ? Will it be to a certain extend in the future ? What is your comment to statement 6) ?

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| AUS-NSW | The present cadastral system in New South Wales may divided into three sectors: 1. The fundamental geodetic and survey control underpinning the cadastre, 2. The cadastre or land titles information, and 3. Land information / mapping. The net financial return from all the above activities returns a small surplus to government. It will continue to evolve in the future with greater integration of datasets. |
| CAN-QUE | The Québec government has created a special fund to finance the Cadastral Reform Program and the cadastral activities. The fund's revenues are derived in particular from amounts collected when cadastral op- |

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| | erations by land surveyors are officialized, from amounts collected when real estate transactions are registered at the registry office, and from the sale of cadastral products. |
| COL | No, the cadastre in Colombia is free for citizens, the state pays. Here it will be very difficult to recover the costs, because people will think it is another tax. We pay a lot of taxes here. |
| CRO | Although our customers pay a price for our service, Croatian cadastre is not cost recovering. |
| CZE | Our cadastre is cost recovering by some 20 % now. Since the investments into the cadastre are very high (cadastral reform being in progress), the questions of future financing are discussed and suitable organisation a financing model is finding. The principle of cost recovering is to be involved, but privatisation is not the condition. |
| FIJ | Yes and it will extend in the future |
| FIN | The cadastral surveys are cost recovering. The maintenance and developing of the cadastre is seen as a part of the basic infrastructure and mostly financed by the state. So far this seems to continue. |
| FRA | The cost is recovered by national taxes. The actual problem is the separation existing between various public services in France. |
| GER | No or better not completely. Cadastral surveys are 100 % cost recovering because the private and the public sector have the same fees in this area. The fees for digital data are calculated in a way that the service for updating the records is cost recovering. The maintenance of the cadastral records and other tasks of the cadastre for different purposes are established as a public service without being able to recover costs. In general cadastral offices in Germany run with a rate of 50% cost recovery. |
| HGK | Land Registry: Yes. Survey : No. The HK Government tries to cut down the expenditure of the survey department in the long run. |
| HUN | Our Unified LR system is not cost recovery yet but because of it's multipurpose nature we approach to cost recovery. Country wide the cost recovery is about 30-40%, but in Budapest is more then 60% and we expect further improvement in the future. The unified systems should reach the cost recovery stage quicker then the traditional organisations. |
| LIT | The keeper of the Real Property Cadastre is the Enterprise established by the Government – State Land Cadastre and Register, which registers real property and rights to it, and which is also the keeper of the Real Property Register. Land surveying activities and cadastral work on buildings are paid from clients. The production of cadastral maps is not fully cost recovering now but the remaining part comes from the funds derived from selling information on real property. |
| NZL | The New Zealand cadastre has been cost recovering for many years. An additional levy was added to cadastral and title charges recently to cover some of the development costs of the Landonline programme. Once Landonline is fully developed, these charges will drop to reflect the new cost recovery levels. This is time-tabled for 2003. |
| POL | It is not and will not be in a short time. |
| SA | It is partly cost recovering and will remain so for a long time. The cadastre is a State asset and as such the State should bear some of the costs. |
| SGP | We are recovering cost in cadastre work. The basis is to charge market rate for the service and users of the service can bear the cost. |
| SWE | Yes, also great contributor to state budget. |

SWI Maintenance is cost recovering, but not the first surveys and renovation. There are tendencies to lower fees for data users in favor of an increased use of the cadastral data.
There is a need and a call for new fee models, but a comprehensive initiative is not yet in sight.

3. Developments beyond “Cadastre 2014”

3a) In your country, do you see other important developments that go beyond “Cadastre 2014”? Do the statements of “Cadastre 2014” lack of certain other developments or would there be other visions in the field of cadastre? Does “Cadastre 2014” have obvious weaknesses?

AUS-NSW Cadastre 2014 requires a strong commitment from government and industry. With the present downsizing of staff, age profile and lack of development of technical and professional skills in surveying and land information systems, it is likely to fall short of its original goals. If that happens, then it will be taken over by another discipline outside surveying.
Many of the outcomes of Cadastre 2014 are “Public Good”. This being the case it is very difficult to have cost recovery of profit as corporate milestone. Only where an individual gains a return or reward in some form, either by securing land ownership, finance or other rewards is it possible to charge or levy a fee on the transaction. With the emergence of the E-business over the Internet, the public may very easily have the perception that land information including cadastres should be free.

CAN-QUE I believe that we should add two statements in the “Cadastre 2014” document.
1. Cadastral authorities must consider the importance to determine or establish, in a law, the legal status of the computerized version of the cadastre
2. Future cadastral organizations must implement and use secure ways for data acquisition and dissemination.
If we don't consider those two statements, the computerized information, contained in the database could be questioned and invalidated by courts.
Even we implement a cadastral database, we still produce, print, and distribute paper versions. It is a need for some users to use them. So, the cadastral law must state about the official version in case of difference between the paper and the computerized versions of the cadastral data.

COL Is possible that developing countries don't have the “culture” resources and political decision to do a modern cadastral system, with only one national cadastral database.

CRO Important development that is going on is recording of buildings and part of buildings (if they exist as special entities in legal transactions) in Croatian cadastre offices.
According to the last questions we do not see any obvious weakness of “Cadastre 2014”.

CZE **Cadastre 2014** vision tries to concentrate all the information of many different institutions and many different administration competencies exclusively into the cadastre, as if it would be quite normal. The opposite is truth. Since every human activity is located somewhere on land, and many of them are concerning the land, nearly every branch of activities, especially state administration, may request accumulation of all information concerning land in its own database (and sell the information on conditions of monopoly). Such attitudes may be, of course, a serious obstacle of any wider working database. Full benefit of such expensive tools needs database concerning land to be completed with other kind of information, e.g. from registers of citizens, economic subjects, environment, taxes, etc. (which are needed not only for simple identification of legal subjects, but first of all for linking information from different databases and creating new information enabling solving other kinds of tasks).

The main weaknesses of Cadastre 2014 vision may be resumed as follows:

- Concentrates all land concerned information from many different branches into *one huge database (under cadastre, which tries to bite off too more from other branches)*,

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| | <ul style="list-style-type: none"> • To keep "complete legal situation" to land is impossible, <i>reasonable selection</i> must be probably done (preferring substantial and generally needed information), • <i>Wide but still isolated</i> database with <i>problematic work, responsibility, and first of all feasibility</i>, • Obvious <i>lack of linking with other databases</i> needed both for proper work (e.g. identification of subjects of rights) and for wider benefit, • Extremely high costs ("complete legal situation") and <i>limited benefit</i> for users (without linking with other databases), • <i>Inappropriate</i> solution for different levels of economics. <p>The cadastre should be only one of many linked together databases creating wider administrative information system for general use both by state administration and private companies and citizens. Every part of state administration do its own job (within competencies) and keeps its information in its own database with full responsibility. The databases are linked together and unified standards, formats and keys enables exchange and complete existing data and create quite new information needed. The cadastre except its own data (about land and rights) provide the whole system with unified localisation information for other databases. The information kept in individual databases are very carefully chosen according its signification, real needs, cost and benefit (within real economic possibilities). Access to the information kept is easy for everybody with limitation only due to law (probably some personal data). The multiple use of information kept for general use enables to minimise costs and creates better conditions for cost recovery of the whole information system. The special role of cadastre in the whole system is its work as a provider of localisation information for all other databases, which is indispensable.</p> |
| FIJ | The cadastre will, in due course incorporate traditional rights which at present are poorly recorded. |
| FIN | Data distribution could be addressed, new possibilities and needs. |
| FRA | The essential way of development is to group together many services and technologies in a world of different interest. The public control is necessary, and the private action too. |
| GER | The internet will play a key role in present and future to bring cadastral data to the customers without more requirements of software than a browser on the side of the customer. This will give a big chance to use the cadastral data for a wider area as before. This requires world-wide accepted standards for data and quality assurance. Cadastral maps show a 2-dimensional picture of a 3-dimensional world. New hardware and software will be able to model a 3-dimensional cadastre. This is very important in urban areas with complex buildings. Cadastre will be a 3D-information system in a few years. A lot of cities develop 3D-city-models not for cadastral purposes but for planning, navigation, environmental aspects etc. The step into a 3D-cadastre is a logical step. |
| HGK | No, I think it's very good. |
| HUN | As I said before our system has practically worked since 1972 with the same concept as the 6 statements declare in the Cadastre 2014. I don't find any weakness in it. |
| LIT | The document "Cadastre 2014" is a very important one and complies with the requirements of the information society. In future, with the improvement of IT, this document could be revised. |
| NZL | Landonline not only includes integration of the electoral system with the cadastre (which is common) but also a high level of integration of the geodetic and cadastral survey systems. Landonline is a multi-datum, multi coordinate system spatial database. Geodetic and cadastral observations reside in the same database tables with the same or similar attributes and structures. Similar tools are used for management of geodetic and cadastral surveys. In both systems, least squares adjustment is used for the generation of coordinates from geodetic and cadastral surveys. A single hierarchy of coordinate accuracies from geodetic through to cadastral is maintained. The principal differences between management of the geodetic and cadastral systems (apart from accuracy) is that the former requires some management of the external private sector contracts under which the geodetic data is provided and the latter is significantly complicated by the requirements of managing parcel topology. |

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| POL | It is illustrating and mirroring the situation and problem of cadastre in Poland. |
| SA | -- |
| SGP | Cadastre 2014 seems to confine to land parcels. In urban cities of high population density, there is the ownership of stratum for dwelling, for doing business, for manufacturing, for other social needs etc. The subdivision of buildings in such cities generates a lot of cadastral activities. |
| SWE | The use of electronic titles, mortgages, payments, planning and building permissions etc. without paper. Communication and information dissemination through Internet. |
| SWI | <ul style="list-style-type: none"> ▪ GIS coordinating bodies on the Federal (KOGIS) and cantonal level were established with little knowledge of the Cadastre 2014 thoughts and visions. ▪ Establishment of IT based land registry systems without strong links to Cadastre and GIS. ▪ Establishment and marketing of spatial related data sets for roads (car navigation) and postal addresses (GeoPost). ▪ Cadastre 2014 doesn't mention the importance of interfaces, or only by the concept of data modeling. In Switzerland, besides Cadastre 2014, the data description language INTERLIS is considered of a high priority, and its use is supported. There are efforts to get INTERLIS approved as ISO/TC 211 compatible. |

3b) Do you have any other observations concerning "Cadastre 2014" ?

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| AUS-NSW | New South Wales is very close to many of the targets of Cadastre 2014. |
| CAN-QUE | -- |
| COL | -- |
| CRO | -- |
| CZE | <p>The whole above mentioned administrative information system can be build up and extended gradually, according to economic possibilities of country. The basic registers (as e.g. cadastre, register of citizens, register of economic subjects, register of environment, and register of taxes) are a backbone of the whole open system and should be preferred in building. High level of inter-discipline co-operation, standardisation and unified rules are crucial and should be in the focus of any solution of these tasks. Since FIG activities can also help, they should concentrate to these issues.</p> <p>The development of Czech cadastre tries to follow above mentioned cadastral concept for next millennium.</p> |
| FIJ | No. |
| FIN | -- |
| FRA | This is a great task and hope it could make a progress in this domain. |
| GER | Cadastre 2014 is very much focused on legal and technical aspects of recording and documenting aspects related to land. In a next step we should put our eyes on aspects of customer orientation and how can we create more products from the cadastral maps and records. The marketing aspect is very important too for a cadastre in a developed country. |
| HGK | -- |
| HUN | -- |
| LIT | We think that this document touches upon the key strategic issues in the development of the real property cadastre and register. |
| NZL | I believe that the development of the Cadastre 2014 statement was a very useful exercise. In the case of |

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| | New Zealand, we hope to have it in place well before 2014. |
| POL | Nothing special. |
| SA | It is an excellent goal to work towards!!!! |
| SGP | No. |
| SWE | The question of private privacy compared to information dissemination through Internet. |
| SWI | <p>The publicity effects of an incomplete information system that is still in the process of being built up have to be considered very carefully.</p> <p>The effects of less accurate geometric elements on the analyses and conclusions have to be measured (for example underground facilities with "precision not accurate").</p> <p>The analysis of the legal basis of different thematic areas (forest, agriculture, water management, environmental protection) showed that there are conflicts concerning spatial related data.</p> |